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## NEW SPECIES OF ROBBER FLIES OF THE GENERA *WILCOXIA* AND *METAPOGON* (DIPTERA: ASILIDAE)

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**ABSTRACT:** Four new species of the genus *Wilcoxia* are described and a key to the species occurring in southwestern United States and northern Mexico is presented. In addition, two new species of the genus *Metapogon* are described.

The genus *Wilcoxia* has remained monotypic since it was described by James (1941); type species *W. cinerea*. These small robber flies, length 5-10 mm, have the general appearance of *Cophura* Osten Sacken, but lack the twisted spine at the apex of the fore tibiae which is characteristic of that genus. The middle tibiae at the apex has a short straight spine which is usually brown or black. *Wilcoxia* is most closely related to *Metapogon* Coquillett which usually has the mesonotum compressed, highly arched, in lateral view, and with strong anterior dorsocentral bristles, the wings are spotted with brown on the crossveins and furcations, the third vein usually is branched before the end of the discal cell, and the stump vein is long. In *Wilcoxia* the mesonotum is not compressed or highly arched and the strong anterior dorsocentral bristles are absent, the wings are hyaline, uniformly brown, or brownish, the third vein is branched opposite or beyond the end of the discal cell, and the stump vein is usually absent. Wilcox and Martin (1957) presented a key to the related genera. Material received recently for identification has prompted me to describe four new species of *Wilcoxia*.

Measurements were made with an ocular micrometer; the face and wings at 40 $\times$ , and the antennae at 75 $\times$ .

### *Wilcoxia martinorum*, new species

**Description:** *Male.* Length 7 mm. Head black, densely grayish white pollinose. Mystax composed of long sparse oral white hairs becoming slightly shorter above and extending to antennae; hairs on frons white; four long and several short bristles on ocellar tubercle and occipitals, yellowish white; beard, hairs on palpi and proboscis white. Face at the antennae 15.28 (.54) width of one eye. Antennae black, grayish pollinose; hairs white; bristles white, two weak bristles below on segment 1 and 2, stronger bristles below on 2; segments 10-8-26-15 in length.

Mesonotum black, densely grayish white pollinose, broadly divided central stripe brown. Sparse hairs white, long erect on humeri and anterior and lateral margins. Bristles yellowish: 2 presutural, 1 supraalar, 1 postalar, 6 dorsocentral (3 anterior). Pleura and coxae densely grayish pollinose, hairs white. Scutellum densely grayish pollinose, sparse discal hairs white, six weak and long yellowish marginal bristles.

Abdomen black, densely gray pollinose with bare spots at middle of tergite 1, 2-6 with an anterior lateral spot on each side and a central posterior spot, and 7 with a small central posterior spot. Hairs white, sparse, long on sides of 1-3; five lateral bristle-like hairs on 1. Sternites gray pollinose, hairs erect white becoming shorter apically. Genitalia brown, hairs white.

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Legs black, fore and middle femora dorsally and laterally, hind femora dorsally and sides of apical third, gray pollinose; hairs and bristles white; claws black; empodia and pulvilli, light brown.

Halteres yellow, base brown. Wings hyaline; veins brown; anterior crossvein at 42/60 (.70) length of discal cell; posterior and anal cells open.

*Female.* Length 7 mm. Frons brownish pollinose. Mesonotum with a spot between humeri and central stripe and the anterior intermediate spots, golden brown pollinose. Abdominal segments 7-8 brownish black and bare of pollen, apical spines brown. Wings with a faint brown clouding on the crossveins and fureations.

*Holotype:* male, California, Riverside Co., White Water, 23 December 1947 (J. Wilcox) CAS. *Allotype:* female, same data as holotype.

Named in honor of the ardent collecting team of Dorothy and Charles H. Martin who found this species literally swarming on the hillside rocks near the entrance to White Water Canyon on 23 December 1947.

*Prey:* A small anthomyiid fly, two borborid flies and a small green hymenopteran were taken by P. H. Arnaud, Jr. and a small winged termite by A. L. Melander.

*Other specimens examined:* ARIZONA. *Maricopa Co.*, ♂, 21 mi N Ajo, 11 November 1966 (R. J. Hamton) EF; *Pima Co.*, 8♂, 7♀, Organ Pipe Cactus National Monument, 2 mi N Headquarters, 11 November 1966 (R. J. Hamton) EF; *Yuma Co.*, 8♂, 12♀, Brenda, 28 October 1967 (S. A. Gorodenski and M. A. Cazier) ASU. CALIFORNIA. *Imperial Co.*, ♀, Painted Gorge, Coyote Mts., 22 August 1934 (C. D. Michener) CIS; *Inyo Co.*, ♂, Death Valley National Monument, 1.5 mi SW Wildrose Station, 3100 ft, 6 November 1968 (P. H. Arnaud, Jr.) at flowers of *Chrysothamnus peniculatus* (Gray) Hall, CAS; *Riverside Co.*, ♀, Coyote Creek, 6 November 1963 (E. I. Schlinger) UCR; 5♂, 2♀, Deep Canyon, P. S. Boyd Desert Research Center, 3.5 mi S Palm Desert, marker no. 57, 6 November to 22 December 1963, 1969, 31 January to 10 February 1970 (S. Frommer, M. E. Irwin, L. La Pre, E. I. Schlinger, and R. Worley) at light and malaise trap, UCR; ♀, Desert Hot Springs, Los Angeles Aqueduct, 25 January 1947 (G. H. Sperry and J. L. Sperry) USNM; 4♂, 7♀, Joshua Tree National Monument (JTNM); Pleasant Valley, Fried Liver Wash, 22 October 1967, 29 October 1965 (E. L. Sleeper) part blacklight, CSCLB; 6♂, 10♀, 5 and 10 mi S Oasis, 17 November 1947, 10 December 1962 (A. F. Howland, I. J. Wilcox, and J. Wilcox) JW; 2♂, Palm Desert, 10 October 1964 (E. Fisher) EF; 4♂, 3♀, Palm Springs, 12 November 1944, 19 November 1943 (A. L. Melander) USNM; 77♂, 73♀, Palm Springs, 23 December 1950, 29 December 1953 to 8 January 1954, 21 January 1953 (P. H. Arnaud, Jr.) JW; 5♂, 2♀, Palm Springs, 21 January 1953, 16 December 1964 (M. W. Stone and J. Wilcox) JW; 9♂, 13♀, Palm Springs, Chino Canyon, 22 to 26

December 1950 (P. H. Arnaud, Jr.) JW; 5♂, 17♀, Palm Springs, Tahquitz Canyon, 24 November 1944 (A. L. Melander) USNM; 46♂, 135♀, White Water, 23 November to 27 December 1947, 6 January 1948 (A. F. Howland, C. H. Martin, D. Martin, I. J. Wilcox, and J. Wilcox) CHM, CIS, JW, UCD; 15♂, 12♀, White Water, 11 November 1966, 13 November, 16 December 1962 (E. Fisher and R. J. Hamton) EF. NEVADA. *Nye Co.*, ♂, Rhyolite, 2 October 1936 (A. J. Basinger) CAS. MEXICO. *Sonora*, 3♂, 2♀, 13 mi SW Sonoyta, 12 November 1966 (E. Fisher) EF.

### *Wilcoxia mouae*, new species

*Description:* *Male.* Length 6 mm. Head black, densely whitish pollinose. Mystax white, composed of weak oral bristles and hairs above about half as long; hairs on frons white; six short erect bristles on ocellar tubercle and occipitals, yellowish; beard, hairs on palpi and proboscis white. Face at antennae 20/24 (.83) width of one eye. Antennae black, hairs white, segment 2 with two longer hairs below; segments 11-11-40-12 in length.

Mesonotum black, gray pollinose, broadly divided central stripe brown. Hairs white, appressed and as long as antennae 1. Bristles yellowish, 4 presutural, 3 supraalar, 3 postalar, 4 posterior dorsocentral. Pleura and coxae gray pollinose, hairs white. Disc of scutellum gray pollinose with short sparse white hairs, broad posterior margin black with four weak, yellowish bristles.

Abdomen shining black, sides of tergites 1-6, slightly projecting inward on posterior margins of 4-6, gray pollinose. Hairs short yellowish white, sparse on dorsum; three or four yellowish lateral bristles on 1. Sternites gray pollinose, hairs erect white, dense apically. Genitalia brown, hairs yellowish.

Femora black, narrow base and about apical third yellowish-red; tibiae and tarsi yellowish-red; fore tarsi and segment 5 of middle and hind tarsi brown. Hairs white; bristles yellowish; claws black; empodia white; pulvilli gray.

Halteres yellow, base brown. Wings brown with lighter spots in posterior cells; veins brown, anterior crossvein at 38/59 (.64) length of discal cell; third vein branched beyond end of discal cell; all posterior cells and anal cell narrowly, open.

*Female.* Length 7 mm. Oral bristles yellowish. Dorsum of abdominal tergite 6, all of 7-8, and apical spines brown. Wings light yellowish brown, anterior crossvein at 45/67 (.67) length of discal cell. Anterior side of fore tibiae and all tarsi brownish black.

*Holotype:* male, California, Mono Co., Mammoth, 9 August 1957 (J. Wilcox) CAS. *Allotype:* female, same data as holotype.

*Other specimens examined:* CALIFORNIA. *Mono Co.*, 26♂, 4♀, Mammoth, 9 August 1957 (I. J. Wilcox and J. Wilcox) EF, JW; *Nevada Co.*, ♀, 3 mi N

Boca, 23 July 1961 (F. D. Parker) UCD; ♀, 1 mi S Hobart Mills, 1 September 1957 (E. G. Linsley) *Chrysothamnus viscidiflorus* var. *typicus*, CIS; ♂, Prosser Dam, 15 July 1966 (D. R. Miller) UCD; ♂, 2 ♀, Truckee, 17 August 1955 (E. G. Linsley) Compositae, CIS; *Tulare Co.*, ♀, Mineral King, 8 August 1959 (W. E. Simonds) CDA; ♂, ♀, 0.5 mi E Smith Meadow, Nine Mile Canyon, 7850 ft, 5 August 1961 (C. W. O'Brien) CIS. NEVADA. *Douglas Co.*, ♂, Topaz Lake, 17 August 1960 (A. S. Menke) UCD.

### *Wilcoxia piniteri*, new species

*Description: Male.* Length 5 mm. Head black densely whitish pollinose, frons with central golden spot. Hairs white, lower third of mystax long, short and sparse above; occipital and four erect bristles on ocellar tubercle white. Face at antennae 16/19 (.84) width of one eye. Antennae brownish black; hairs white; segment 2 with one weak white bristle below; 3 nearly uniform in width and style broad; segments 7-8-25-10 in length.

Mesonotum black; grayish pollinose, divided central stripe, anterior and posterior intermediate spots and a small spot opposite postalar calli, brown pollinose. Short sparse hairs white. Bristles yellowish, 2 weak humeral, 2 presutural, 2 supraalar, 1 postalar, 4 dorsocentral (1 anterior). Pleura and coxae grayish pollinose, hairs white. Scutellum grayish pollinose, two erect marginal bristles yellowish, fine marginal hairs white.

Abdomen brownish black; narrow lateral margins of all tergites and very narrow anterior margin of 2-6, gray pollinose. Fine hairs white, longer laterally on 1-3; three yellowish lateral bristles on 1. Sternites grayish pollinose, narrow central line bare of pollen, hairs white. Genitalia small and black, hairs white.

Femora except tips, apices of tibiae and tarsal segments black; tips of femora, basal part of tibiae and tarsi, yellowish-red. Hairs and bristles white; claws black, reddish basally; pulvilli brown.

Halteres yellowish, base of stem brownish. Wings hyaline, veins light brown, anterior crossvein at 28/46 (.61) length of discal cell; third vein branched opposite end of discal cell; all posterior and anal cells open.

*Female.* Length 6 mm. Intermediate spots of mesonotum bare of pollen and shining brownish-black. Anterior fascia on abdomen slightly broader, and absent on tergite 6; apical spines black. Third vein branched slightly beyond end of discal cell and in one wing with minute stump vein.

*Holotype:* male, New Mexico, Catron Co., Datil, Continental Divide, 17 July 1930 (T. F. Winburn and R. H. Painter) RHP. *Allotype:* female, same data as holotype.

Named in honor of the late Reginald H. Painter who, although not especially interested in Asilidae,

always collected rare and interesting species on his many trips.

*Other specimens examined:* NEW MEXICO *Catron Co.*, ♂, 2 ♀, Datil, Continental Divide, 17 July 1930 (T. F. Winburn and R. H. Painter) RHP, JW. ARIZONA. *Apache Co.*, ♀, Chin Lee (Chinle), 26 July 1935 (Bruce) USNM. UTAH. *Kane Co.*, ♀, 16 mi W Glen Canyon, 23 September 1969 (P. H. Timberlake) *Sutienzia* sp., UCR; *Millard Co.*, ♂, 23 mi W Delta, 4900 ft, 4 September 1965 (R. H. Painter and E. M. Painter) RHP; *Utah Co.*, ♀, 16 mi SW Vernal, 5000 ft, 7 September 1965 (R. H. Painter and E. M. Painter) RHP; county undetermined, ♀, Showell, 20 August 1932 (G. F. Knowlton) JW, [anterior fascia on abdomen of this specimen much broader and faint fascia on tergite 6].

### *Wilcoxia pollinosa*, new species

*Description: Male.* Length 8 mm. Head black, densely white pollinose. Hairs and bristles white; mystax of about eight oral bristles and short hairs extending half way to antennae; two erect bristles on ocellar tubercle. Face at antennae 17/23 (.74) width of one eye. Antennae black; short sparse hairs white; one weak white bristle below on segment 1 and one strong below on 2; segments 9-10-29-14 in length.

Mesonotum black; white pollinose, divided central stripe and small intermediate spots brown. Hairs short sparse semierect white. Bristles white, 2 presutural, 1 supraalar, 1 postalar, 4 weak, anterior dorsocentral (pin obscures posterior ones). Pleura and coxae black; white pollinose; hairs white, short on coxae, long on hypopleura. Scutellum black; white pollinose; three strong white marginal bristles.

Abdomen black; tergites 1-8 white pollinose, small central and lateral bare spots on 2-6. Hairs short white, recumbent on dorsum, semierect on sides; five white lateral bristles on 1 plus a few longer hairs. Sternites grayish white pollinose, hairs short semierect white. Genitalia yellowish-red basally, brown apically; hairs long and white.

Femora and tibiae yellowish-red; apical half of fore femora, apical fourth of middle and hind femora, and apical fifth of all tibiae, black; tarsi black. Hairs and bristles white; claws black, base reddish; pulvilli and empodia yellowish-red.

Halteres yellowish, lower stem light brown. Wings hyaline; veins brown; anterior crossvein at 36.57 (.63) length of discal cell; third vein branched slightly beyond end of discal cell; posterior cells broadly open; anal cell narrowly open.

*Female.* Length 10 mm. Weak bristle below only on antennal segment 2. Mesonotal pollen with a yellowish cast; two posterior and four anterior dorsocentral bristles; two scutellar bristles. Abdominal segments 1-6 and 7 basally, grayish pollinose. 8 bare; terminalia and spines reddish-brown, hairs yellowish.

Hairs and bristles of legs white to yellowish. Anterior crossvein at 50/76 (.66) length of discal cell; third vein branched opposite end of discal cell.

*Holotype*: male, New Mexico, Chaves Co., 6 mi W Roswell, 15 September 1965 (P. H. Timberlake) UCR. *Allotype*: female, New Mexico, Eddy Co., 0.5 mi N State Line, Hwy. 180 and 62, 2 October 1962 (C. S. Papp) UCR.

*Other specimens examined*: NEW MEXICO, Eddy Co., ♀, 16 mi S Artesia, 3000–3500 ft, 24 September 1950 (W. Gertsch and M. Cazier) AMNH [thorax and abdomen greased, ground color black except posterior lateral margins, and postalar calli of mesonotum reddish; 3 scutellar bristles]; *Torrance Co.*, ♀, Gran Quivira, 11 August 1931 (R. H. Painter) RHP [third antennal segment missing and scutellum crushed]. TEXAS, *Hudspeth Co.*, ♀, 30 August 1940 (D. J. Knull and J. N. Knull) OSU.

### KEY TO THE SPECIES OF *WILCOXIA*

1. Posterior margin of the scutellum bare of pollen; wings of the males brown, females lighter brown; abdomen black, lateral margins gray pollinose somewhat expanded apically on the tergites ..... 2
  - Scutellum all pollinose; wings hyaline; abdomen with at least some pollen on the dorsum of the tergites ..... 3
2. Legs black, basal fourth of fore, middle, and basal half of hind tibiae bright yellow, apices of fore and hind femora yellow; mesonotum gray pollinose, divided central stripe black, and small anterior intermediate spots brown; length 6.5–7.0 mm (Colorado) .... *cinerea* James
  - Legs yellowish-red, basal two-thirds of femora, except extreme base, black; mesonotum densely gray pollinose, divided central stripe indistinctly brown; length 6–7 mm (California and Nevada) ..... *monae* Wilcox
3. Legs black, femora largely white pollinose and only the tips reddish; abdomen white pollinose, central part of tergite 1, large central posterior spot and small lateral anterior spots on 2–6, bare of pollen; length 6–7 mm (California, Arizona, and Nevada) ..... *martinorum* Wilcox
  - At least the tibiae largely yellowish or reddish ... 4
4. Femora except tips, tips of tibiae, and tips of tarsal segments brown or black, tips of femora, and basal part to tibiae and tarsi reddish; abdomen black, narrow lateral margins of tergites 1–6, narrow anterior margins of male 2–6 and female 2–5, gray pollinose; length 5–6 mm (Arizona, New Mexico, and Utah) ..... *painteri* Wilcox
  - Femora except apical fourth and tibiae except

tips, yellowish-red, apex of femora and tibiae, and all of tarsi, brown or black; abdomen black, densely gray pollinose, tergites 2–6 with small lateral bare spots; length 8–11 mm (New Mexico and Texas) .... *pollinosa* Wilcox

### *Metapogon amargosae*, new species

*Description*: *Male*. Length 8 mm. Head black, white pollinose, hairs and bristles white. Face at antennae 22/28 (.79) width of one eye. Antennae black, grayish pollinose; hairs white, segments 1–2 each with a white bristle below; segments 10–10–35–19 in length.

Mesonotum black; grayish white pollinose; broadly divided central stripe, small intermediate spots, and dorsocentral stripes broad anteriorly, brown. Hairs erect, white, and subequal in length to antennae 1–2. Bristles white, 2–3 presutural, 1 supraalar, 1 postalar; bristles brown, four anterior and four posterior dorso-central and 12 anterior on the central stripe. Pleura and coxae grayish pollinose, hairs white. Scutellum white pollinose with a round central bare spot, hairs white, two strong, brown and two weak, pale marginal bristles.

Abdomen black; sides of tergites 1–3, anterior margins of 2–7 and posterior corners of 2–6 extending narrowly inward on posterior margins of 2–4 (entire on 4), grayish-white pollinose. Hairs and bristles white, long on sides of 1–3. Sternites grayish pollinose, 2–6 with small lateral bare spots, and a median, apical, triangular brownish spot, hairs white. Genitalia small, black, hairs white.

Legs black, tips of femora and dorsum of tibiae brown. Hairs and bristles white; claws black, base reddish; empodia and pulvilli whitish, pulvilli 4/5 length of claws.

Halteres yellowish, base and lower part of knob brown. Wings hyaline with small, brown spots on the crossveins and furcation; veins brown; anterior crossvein at 43/68 (.63) length of discal cell; third vein branched before end of discal cell and with short stump vein.

*Female*. Length 9 mm. One weak, pale scutellar bristle (others probably broken off). Anterior fascia and posterior pollinose spots on abdominal tergites 4–6 connected, 7 largely pollinose dorsally.

*Holotype*: male, Nevada, Nye Co., 2 mi S Beatty, 24 December 1964 (D. L. Coates) UI (CAS). *Allotype*: female same data, as holotype.

This species runs to couplet 4 in the key to the species (Wilcox, 1964). In *Metapogon pictus* Cole and *M. tricellus* Wilcox the white hairs anteriorly on the central stripe are subequal in length to antennal segment 1, and there are no bristles on the anterior central stripe. In *M. gibber* (Williston) and *M. carinatus* Wilcox, the anterior hairs on the central stripe are usually black, but a few *M. carinatus* have white hairs; in *M. gibber* there are no anterior bristles

on the central stripe whereas, *M. carinatus* has about 30 black bristles.

*Other specimens examined:* NEVADA. *Nye Co.*, 2 ♂, 2 mi S Beatty, 24 December 1964 (D. L. Coates) UI, JW. ARIZONA. *Maricopa Co.*, ♀, Tempe; 21 November 1967 (D. Plantz) ASU. CALIFORNIA. *Riverside Co.*, ♀, Blythe, 28 October 1940 (K. S. Snyder) Tamarix, CIS; *San Bernardino Co.*, ♂, ♀, Needles, 20 March 1967 (R. M. Bohart and D. S. Horning, Jr.) UCD; 6 ♂, 3 ♀, Twentynine Palms, 23 October, 6 November 1967 (E. Fisher) EF, [taken resting on the foliage of low shrubs on the sand dunes near the golf course about 2 miles northeast of town].

### *Metapogon obispae*, new species

*Description:* Male. Length 5 mm. Head black; grayish pollinose with a golden tinge on face, and central frons brown. Mystax with six brown oral and six black bristles above, plus a few short brown and black hairs; 3-4 short, black hairs on sides of frons; four strong, erect black bristles on ocellar tubercle; short occipital bristles black above and brown below; sparse beard and hairs on palpi and proboscis white. Face at antennae 18/22 (.82) width of one eye. Antennae black; short sparse hairs, and one bristle below on segment 1, black; segment 3 broader beyond middle; segments 9-9-30-9 in length.

Mesonotum black; central stripe and intermediate spots dark brown, lateral margins golden brown, area between central stripe and intermediate spots, and a narrow median line, silvery pollinose. Sparse hairs black and subequal in length to antennae 1. Bristles black, 2 presutural, 1 supraalar, 1 postalar, 1 weak posterior and three strong anterior dorsocentral. Pleura and coxae black, grayish-brown pollinose; short hairs on coxae white; 5-6 long hypopleurals black. Scutellum black; silvery pollinose with golden tinge; four strong, black marginal bristles.

Abdomen black; grayish pollinose with golden tinge, at some angles lateral, anterior black spots are apparent on tergites 2-5 and small round central spots on 2-6. Hairs short, sparse, recumbent, and black, white laterally with a few longer hairs on 1-2; four to five brown lateral bristles on 1. Sternites black, grayish-golden pollinose, short, sparse erect hairs white. Genitalia black, hairs white.

Legs black, tips of femora and dorsum of tibiae dark reddish; hairs white; bristles brown; claws black; pulvilli dark brown, 4/5 length of claws; empodia brown.

Halteres yellow, stem brown. Wings light brown, the brown intensified on the crossveins, furcations, and apex; veins black; anterior crossvein at 31/45 (.69) length of discal cell; third vein branched slightly before end of discal cell and with long stump vein; posterior cells broadly open; anal cell narrowly open.

*Female.* Length 6 mm. Median line of mesonotum golden. Abdominal segments 1-7 grayish pollinose, 8 shining black; apical spines black, short hairs white.

*Holotype:* male, California, San Luis Obispo Co., Baywood Park, 24 October 1970 (J. Wilcox) CAS. *Allotype:* female, same data as holotype, 25 October 1970.

In the key to the species (Wilcox, 1964) this species runs to couplet 10; with its long pulvilli it would be close to *M. tarsalus* Wilcox from which it differs by having the abdomen all pollinose and is without bare spots on the mesonotum.

*Other specimens examined:* CALIFORNIA. *San Luis Obispo Co.*, 41 ♂, 28 ♀, Baywood Park, 23 to 25 October 1970 (J. Wilcox) CAS, [collected on the ground and low weeds on the dunes overgrown with trees, brush, and weeds about two miles east of Morro Bay (Baywood Park P.O.) near the intersection of Nipomo Ave. and Willow Drive].

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